

CLAIMS

What is claimed is:

1. A method for manipulating the transportation of packets between a source
5 network and IP based destination network, the method comprising the steps of:

(a) receiving a packet from a source, the received packet being intended
for a destination;

(b) parsing the received packet to identify the received packet as a packet
that can be manipulated;

10 (c) updating a cross-reference table, the cross-reference table enabling the
reconstruction of a connection to the destination;

(d) manipulating the received packet by sending the received packet to a
manipulation module;

(e) reconstructing the connection to the destination for the manipulated
15 packet using the cross-reference table; and

(f) transferring the manipulated packet to the destination,

wherein the received packet and the manipulated packet are transferred
over network based tunnels.

2. The method of claim 1, wherein the step of manipulating the received
20 packet comprises modifying the received packet in such a way as to accelerate the
communication.

3. The method of claim 1, wherein the IP based data network is the Internet,
and the step of parsing the received packet further comprise examining the destination
and source addresses of the received packet.

25 4. The method of claim 1, wherein the network based tunnels may
implemented using a protocol that belongs to a group of protocols comprising: GRE, IP
over IP, IEEE 802.1Q (VLAN Tagging) and the step of transferring the manipulated
packet comprises transferring the manipulated packet over such network based tunnel.

5. The method of claim 1, wherein the step of updating the cross-reference table further comprises using a source port number of the received packet coming from the manipulation module.

6. The method of claim 1, wherein the step of updating the cross-reference
5 table further comprises using the IP address of the manipulation module.

7. The method of claim 1, wherein the step of updating the cross-reference table further comprises using the IP address of the destination.

8. The method of claim 1, wherein the step of updating the cross-reference table further comprises using the IP address of the source.

10 9. The method of claim 1, wherein the manipulation module comprises a plurality of virtual manipulation servers with each virtual manipulation server being dedicated to a particular destination, and the step of manipulating the received packet further comprises sending the received packet to an appropriate virtual manipulation server.

15 10. The method of claim 1, further comprising the step of parsing the received packet to identify the received packet as a packet that cannot be manipulated and forwarding the received packet, as is, toward the destination.

11. A method for manipulating the transportation of original packets transported between at least one remote client via an access network and at least one IP
20 based private data network, wherein the original packets are encapsulated in network based tunnel packets, and wherein the manipulation is done at the access network service provider's premises, the method comprising the steps of:

transferring, at the access network service provider's premises, the transportation between the at least one remote client and the at least one IP based private data network
25 via a manipulation system;

parsing a received network based tunnel packet to determine if the received network based tunnel packet can be manipulated;

forwarding the received network based tunnel packet, as is, towards a destination if the received network based tunnel packet cannot be manipulated;

30 if the received network based tunnel packet can be manipulated:

retrieving the original packet out of the network based tunnel packet;
updating a cross-reference table with parameters that associate the original
packet with the received network based tunnel packet, the cross-reference table
enabling the reconstruction of a manipulated network based tunnel packet that
5 will be transferred to the destination after the manipulation of the received
original packet;

manipulating the original received packet;

reconstructing the manipulated network based tunnel packet with the
manipulated original received packet; and

10 transferring the manipulated network based tunnel packet to the
destination over network based tunnels.

12. The method of claim 11, wherein the step of manipulating the received
packet is for accelerating the communication.

13. The method of claim 11, wherein the step of reconstructing the
15 manipulated network based tunnel packet with the manipulated original received packet
using the cross-reference table.

14. The method of claim 11, wherein the communication between the access
network and at least one IP based private data network is via the Internet, and the step of
parsing the received network based tunnel packet further comprises examining the
20 destination and source addresses of the received network based tunnel packet.

15. The method of claim 11, wherein the network based tunnels may be
implemented using a protocol that belongs to a group of protocols comprising: GRE, IP
over IP, IEEE 802.1Q (VLAN Tagging).

16. The method of claim 11, wherein the network based tunnel is a
25 compulsory tunnel.

17. The method of claim 11, wherein the communication between the remote
client and the access network service provider's premises is over cellular connection.

18. The method of claim 11, wherein the step of updating the cross-reference
table further comprises using parameters, wherein the parameters that are used for
30 comprise a source port number of packets coming from a manipulation module.

19. The method of claim 11, wherein the step of updating the cross-reference table further comprises using parameters, wherein the parameters that are used for updating the cross-reference table comprise the IP address of a manipulation module.

20. The method of claim 11, wherein the step of updating the cross-reference
5 table further comprises using parameters, wherein the parameters that are used for updating the cross-reference table further comprise the IP address of the at least one IP based private data network.

21. The method of claim 11, wherein the step of updating the cross-reference table further comprises using parameters, wherein the parameters that are used for
10 updating the cross-reference table further comprise the IP address of the at least one remote client.

22. The method of claim 11, wherein the manipulation system comprises a plurality of virtual manipulation servers with each virtual manipulation server being dedicated to one IP based private data network, and the step of manipulating the received
15 original packet further comprises sending the received original packet to an appropriate virtual manipulation server.

23. A system for manipulating the transportation of original packets transported between at least one remote client via an access network and at least one IP based private data network, wherein the original packets are encapsulated in network
20 based tunnel packets, and wherein the system is at the access network service provider's premises, the system comprising:

an access gateway interface module for receiving network based tunnel packets from, and sending network based tunnel packets toward the at least one remote client via an access gateway;

25 a border gateway interface module for receiving network based tunnel packets from, and sending network based tunnel packets toward the at least one IP based private data network via a border gateway;

a manipulation module for manipulating the original packets that are encapsulated in the network based tunnel packets;

a manipulation equipment interface module, interfacing to the access gateway interface module and the border gateway interface module and the manipulation module and that is operable to receive network based tunnel packets from, and send network based tunnel packets to the access gateway interface and the border gateway interface
5 modules;

the manipulation equipment interface being further operable to manipulate received network based tunnel packets by retrieving an original packet, sending the retrieved original packet to the manipulation module, receiving a manipulated packet that is the result of the manipulation of the original packet, reconstructing the network based
10 tunnel packet by installing the manipulated original packet and forwarding the reconstructed network based tunnel packet to either the access gateway interface or the border gateway interface.

24. The system of claim 23, wherein the network based tunnel may be implemented using a protocol that belongs to a group of protocols comprising: GRE, IP
15 over IP, IEEE 802.1Q (VLAN Tagging).

25. The system of claim 23, wherein the manipulation module further comprises a plurality of virtual manipulation servers, wherein each virtual manipulation server is dedicated to processing traffic for one IP based private data network.

26. The system of claim 23, wherein the manipulation module further
20 comprises a plurality of virtual manipulation servers that are automatically initiated.

27. The system of claim 23, wherein the access gateway interface module maintains a table of all destinations that are users of the manipulation equipment.